Sandeel

Noordzeeloket identified three species of sandeel in the North Sea and Wadden Sea (Understanding the Ecological Role of Sand eels, n.d.). The three species of Sandeel are: Greater sandeel (*Hyperoplus lanceolatus*), Lesser sandeel (*Ammodytes tobianus*), and Small sandeel (*Ammodytus marinus*) (Understanding the Ecological Role of Sand eels, n.d.). Sandeel, the lesser sandeel in particular, is one of the most abundant fish in the North Sea and has highly variable recruitment dynamics (Arnott & Ruxton, 2002). Because of this they have a high importance for the entire North Sea, as well as the Wadden Sea (Arnott & Ruxton, 2002; Furness, 2002). Sandeel is a key food for many seabirds and seals, and is also the target of the largest single-species fishery in the North Sea (Furness, 2002). Furness goes on to denote that, despite claims that sandeel fishing has harmed dependent predator populations, census data showed that most seabirds and grey seals have increased in numbers as the fishery grew and reached peak harvest (2002). Sandeel primarily feed upon zooplankton and are also known to specifically target the larval-stage of many fish species (Ritzau et al., 2014). This includes larval-stage fish of their own species, showing the cannibalistic nature of these fish (Ritzau et al., 2014).

History/ Population trends

Sandeel are a keystone prey species in the North Sea, which historically means that if the stock collapses, that all predators that consume Sandeel will likely face a famine (Clausen et al., 2019). Sandeel have also been of commercial interest for many countries surrounding the North Sea, with Denmark being the primary country from which Sandeel are caught (Clausen et al., 2019). Other countries that also participate in the catching of Sandeel on the North Sea are: Norway, Sweden, United Kingdom, and Germany (Clausen et al., 2019).

Miscellaneous

- This study used *Ammodytus tobianus* as Lesser sandeel and *Ammodytus marinus* as Small sandeel, eventhough the given English names are interchangeable (Arnott & Ruxton, 2002; Clausen et al., 2019; Furness, 2002; Rindorf et al., 2016; Ritzau et al., 2014). The major difference between the two species is habitat range, which is more directed northward for *Ammodytes marinus* (Clausen et al., 2019).
- According to Rindorf et al., *Ammodytus marinus* reach an average length of 25cm (2016). *Ammodytus tobianus* reach about the same length, whereas *Hyperoplus lanceolatus* can become slightly larger than both other species (Understanding the Ecological Role of Sand eels, n.d.).

Diet

- Zooplankton (Eliasen et al., 2011; Ritzau et al., 2014)
- Phytoplankton (Eliasen et al., 2011; Ritzau et al., 2014))

Sources

Arnott, S. A., *, & Ruxton, G. D. (2002). Sandeel recruitment in the North Sea: demographic, climatic and trophic effects. In *MARINE ECOLOGY PROGRESS SERIES* (Vol. 238, pp. 199–210). Retrieved December 3, 2024, from https://www.int-res.com/articles/meps2002/238/m238p199.pdf

Clausen, L. W., Van Deurs, M., & Rindorf, A. (2019). Stock Annex: Sandeel (Ammodytes marinus) in the North Sea area 1 (SA1). *ICES*. https://doi.org/10.17895/ices.pub.18623159.v1

Eliasen, K., Reinert, J., Gaard, E., Hansen, B., Jacobsen, J., Grønkjær, P., & Christensen, J. (2011). Sandeel as a link between primary production and higher trophic levels on the Faroe shelf. *Marine Ecology Progress Series*, *438*, 185–194. https://doi.org/10.3354/meps09301

Furness, R. (2002). Management implications of interactions between fisheries and sandeel-dependent seabirds and seals in the North Sea. *ICES Journal of Marine Science*, *59*(2), 261–269. https://doi.org/10.1006/jmsc.2001.1155

Rindorf, A., Wright, P. J., Jensen, H., & Maar, M. (2016). Spatial differences in growth of lesser sandeel in the North Sea. *Journal of Experimental Marine Biology and Ecology*, *479*, 9–19. https://doi.org/10.1016/j.jembe.2016.02.007

Ritzau, O., Van Deurs, M., Behrens, J., Bekkevold, D., Brander, K., Plambech, M., Plet-Hansen, K. S., & Mosegaard, H. (2014). Prey or predator—expanding the food web role of sandeel Ammodytes marinus. *Marine Ecology Progress Series*, *516*, 267–273. https://doi.org/10.3354/meps11064

Understanding the ecological role of sand eels. (n.d.). Noordzeeloket. Retrieved December 3, 2024, from https://www.noordzeeloket.nl/functies-gebruik/windenergie/ecologie/wind-zee-ecologisch-programma-wozep/newsletter-wozep/wozep-newsletter-4/understanding-ecological-role-sand-eels/#:~:text=The%20great%20sand%20eel%20(Hyperoplus,a%20few%20weeks%20before%20hatching.